

WHAT IS CLAIMED IS:

1 1. An electric circuit for an electrical system in a motor vehicle, the
2 electrical system being powered by a voltage supply and having two functional
3 states, the electric circuit comprising:

4 at least one control stage including a switching device, an electronic
5 switching module, a single signal output, and a single connecting line connecting the
6 signal output to the electrical system;

7 the switching device including at least one manually operated push-
8 button switching element switchable between two switching states for generating
9 respective switching state output signals at the signal output in order to switch the
10 electrical system between the two functional states;

11 the electronic switching module including a non-volatile flip-flop
12 formed by EEPROM cells which are operable for storing the switching state of the
13 switching element, wherein the electronic switching module maintains the switching
14 state output signal corresponding to the stored switching state at the signal output to
15 maintain the functional state of the electrical system until the switching element is
16 switched to the other switching state, and maintains the switching state output signal
17 corresponding to the stored switching state at the signal output to maintain the
18 functional state of the electrical system during an interruption of power from the
19 voltage supply to the electrical system.

1 2. The electric circuit of claim 1 wherein:
2 the flip-flop includes an odd number of EEPROM cells.

1 3. The electric circuit of claim 2 wherein:
2 the flip-flop includes three EEPROM cells.

1 4. The electric circuit of claim 1 wherein:
2 the electronic switching module further includes an evaluation stage
3 operable for scanning respective states of the EEPROM cells of the flip-flop.

1 5. The electric circuit of claim 4 wherein:

2 the evaluation stage includes a test component and a control logic, the
3 control logic including a probability component, wherein the test component is
4 operable for checking the respective states of the EEPROM cells and
5 correspondingly influences the control logic if the respective states of the EEPROM
6 cells are identical, wherein the probability component exercises an influence
7 corresponding to the majority of states if the respective states of the EEPROM cells
8 are not identical.

1 6. The electric circuit of claim 1 wherein:
2 the at least one manually operated push-button switching element
3 includes two manually operated push-button switching elements switchable between
4 two switching states for generating respective switching state output signals at the
5 signal output in order to switch the electrical system between the two functional
6 states.

1 7. The electric circuit of claim 6 wherein:
2 the electronic switching module includes first and second inputs
3 which are connected to the voltage supply, wherein the two switching elements are
4 connected between respective inputs of the electronic switching module and the
5 voltage supply such that operation of the first switching element causes the switching
6 state output signal to be "0" at the signal output and operation of the second
7 switching element causes the switching state output signal to be "1" at the signal
8 output.

1 8. The electric circuit of claim 7 wherein:
2 the electronic switching module further includes a pair of
3 light-emitting diodes each inserted respectively between the first and second inputs
4 of the electronic switching module and the voltage supply in series with the
5 respective switching elements, wherein the light-emitting diodes emit light when
6 their respective switching element is operated.

1 9. The electric circuit of claim 8 wherein:
2 the two light-emitting diodes emit different colored light.

1 10. The electric circuit of claim 9 wherein:
2 one of the two light-emitting diodes emits red light and the other of
3 the two light-emitting diodes emits green light.

1 11. The electric circuit of claim 1 wherein:
2 a positive pole of the voltage supply is connected to an external
3 voltage input of the electronic switching module via a limiting resistor which limits
4 the transformed dissipation loss in the case of over-voltage.

1 12. The electric circuit of claim 1 wherein:
2 an external supply input of the electronic switching module is
3 connected to an internal supply input via an integrated diode which serves as polarity
4 reversal protection.

1 13. The electric circuit of claim 12 wherein:
2 a support capacitor connected between the internal supply input and
3 a grounded terminal of the electronic switching module to stabilize the voltage
4 supplied by the voltage supply to the electronic switching module.

1 14. An electric circuit for an electrical system in a motor vehicle,
2 the electrical system being powered by a voltage supply and having two functional
3 states, the electric circuit comprising:
4 at least one control stage including a switching device, an electronic
5 switching module, a single signal output, and a single connecting line connecting the
6 signal output to the electrical system;
7 the switching device including two manually operated push-button
8 switching elements switchable between two switching states for generating
9 respective switching state output signals at the signal output in order to switch the
10 electrical system between the two functional states;
11 the electronic switching module including a non-volatile flip-flop
12 formed by EEPROM cells which are operable for storing the switching state of the
13 switching element, wherein the electronic switching module maintains the switching

14 state output signal corresponding to the stored switching state at the signal output to
15 maintain the functional state of the electrical system until the switching elements are
16 switched to the other switching state, and maintains the switching state output signal
17 corresponding to the stored switching state at the signal output to maintain the
18 functional state of the electrical system during an interruption of power from the
19 voltage supply to the electrical system.

1 15. An electric circuit for an electrical system in a motor vehicle and
2 powered by a voltage supply, the electric circuit comprising:

3 at least one control stage including a switching device, an electronic
4 switching module, a single signal output, and a single connecting line connecting the
5 signal output to the electrical system for switching an appertaining part of the
6 electrical system in one of two functional states;

7 the switching device including at least one manually operated push-
8 button switching element switchable between two switching states for generating
9 respective switching state output signals at the signal output in order to switch the
10 appertaining part of the electrical system between the two functional states;

11 the electronic switching module including a non-volatile flip-flop
12 formed by EEPROM cells which are operable for storing the switching state of the
13 switching element, wherein the electronic switching module maintains the switching
14 state of the output signal corresponding to the stored switching state at the signal
15 output to maintain the functional state of the appertaining part of the electrical
16 system until the switching element is switched to the other switching state, and
17 maintains the switching state of the output signal corresponding to the stored
18 switching state at the signal output to maintain the functional state of the
19 appertaining part of the electrical system during an interruption of power from the
20 voltage supply to the electrical system.

1 16. The electric circuit of claim 15 wherein:

2 the at least one manually operated push-button switching element
3 includes two manually operated push-button switching elements switchable between
4 two switching states for generating respective switching state output signals at the

5 signal output in order to switch the appertaining part of the electrical system
6 between the two functional states.

1 17. The electric circuit of claim 16 wherein:
the flip-flop includes an odd number of EEPROM cells.

1 18. The electric circuit of claim 17 wherein:
2 the flip-flop includes three EEPROM cells.

1 19. The electric circuit of claim 16 wherein:
2 the electronic switching module further includes an evaluation stage
3 operable for scanning respective states of the EEPROM cells of the flip-flop.

1 20. The electric circuit of claim 19 wherein:
2 the evaluation stage includes a test component and a control logic, the
3 control logic including a probability component, wherein the test component is
4 operable for checking the respective states of the EEPROM cells and
5 correspondingly influences the control logic if the respective states of the EEPROM
6 cells are identical, wherein the probability component exercises an influence
7 corresponding to the majority of states if the respective states of the EEPROM cells
8 are not identical.